Exhibiting Communications:

Digital Narratives at the National Library of Medicine

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Abstract

In May of 2001, the Exhibition Program at the National Library of Medicine, National Institutes of Health opened *The Once and Future Web: Worlds Woven by the Telegraph and Internet*. The exhibition is presented as two intertwining narratives moving through four themes, one telling stories about the telegraph and the other about the Internet. The exhibition combines elements of history and science museum's styles of presentation and makes extensive use of interactive technology.

For *The Once and Future Web*, the challenge of displaying and interpreting communications technology provided the Exhibition Program with an opportunity to use multimedia interactives to deliver exhibition content. The exhibition's interactives both make use of and demonstrate the influence of communications technology by providing visitors with digitized media from many different original sources. One of the most powerful advantages of digitization is the ability to combine many different source media, including digital artifacts in their own medium, into a consistent, easily navigable experience.

The process of creating these interactives also allows the Exhibition Program to re-purpose the content to further extend the reach of the exhibition message to new

audiences. For this exhibition a set of digital animations were created to explain complex technological concepts. Also, many original interviews with innovators in the field were digitally taped. Finally, several audio pieces were recorded from historic texts and sheet music. All these pieces were created with the knowledge that they could be re-purposed and presented in other formats and configurations, including a website and a DVD, to provide accompaniments to the exhibition and prolong its life past the physical installation. The re-purposing process is not without its challenges, however, as the number of multimedia materials increases, accessibility and archiving issues become more difficult.

Introduction

In May of 2001, the Exhibition Program at the National Library of Medicine, National Institutes of Health opened *The Once and Future Web: Worlds Woven by the Telegraph and Internet.* For this narrative exhibition we gathered artifacts and images from a wide variety of sources to help tell the story of how an earlier generation's enthusiasm for a new communication technology –the telegraph – holds important lessons for people living and working in the age of the information superhighway. In the exhibition, two intertwining stories form a narrative about the development and effects of the telegraph and the Internet. The narrative compares and contrasts the two historical stories by exploring four themes: developing the technology, social impact of the technology, the cultural impact of the technology, and medical applications.

The National Library of Medicine is a unique environment for exhibitions. Our institution is the world's largest medical library. Its History of Medicine Division, of

which the Exhibition Program is a part, contains an exemplary collection of historical, rare, and beautiful medical texts and manuscripts dating from the 11th century, as well as prints, photographs, drawings, and films. Many libraries have fairly recently begun to produce large-scale exhibitions as part of their outreach and educational programs including the New York Public Library and the Library of Congress. As each Library begins to produce exhibitions it develops an exhibition style of it's own often drawing heavily from its collections.

The Exhibition Program at The National Library of Medicine was established in 1996. Until then the Library had no exhibition philosophy. Art museums produce exhibitions featuring artifact driven storylines. Science museums and children's museums usually have numerous interactive components and focus on teaching specific lessons. History museums generally seek to interpret complex and sometimes controversial narratives. The Exhibition Program at The National Library of Medicine has created a philosophical approach to exhibitions that combines the features of various typical museum interpretive styles in order to best reach our audience. Our program produces large-scale, historical, narrative exhibitions featuring social, cultural, and historical topics in science, health and medicine. These projects are educational, fun, and relevant to the general public. Each topic is framed in a historical context and examines contemporary issues and often includes explanations of scientific discoveries and technological innovations. We primarily focus on communicating a narrative and bringing it to life for our visitors by illustrating it with artifacts, graphics and multimedia, most of them borrowed from other

institutions. With *The Once and Future Web*, The Exhibition Program has applied this philosophy to the creation of an exhibition that makes extensive use of technology.

The use of technology to transmit information to the public is a topic of great interest to both libraries and museums and one that the National Library of Medicine feels strongly about. The web has become a vital tool for the Library's communication with the public, in making its collections available for searching, delivering information resources such as MEDLINE*plus*, a health information resource, and providing narrative interpretation of segments of its collection. The History of Medicine Division for example, has a number of online exhibitions and essays built around its numerous manuscript collections. In *The Once and Future Web*, The National Library of Medicine combines its longstanding interest in communications technology with its interest in exhibitions as a communications tool. In the past, each of the Exhibition Program's projects has had a technology component in a Web presence, which lasts well beyond its physical installation and presents the illustrated narrative created for the physical installation. *The Once and Future Web* goes beyond this and reflects a new dedication of the Library to technology on the exhibition floor.

Exhibiting Communications

An exhibition about communications technology can provide an easy and perhaps logical step into a technology driven exhibition. It is also a good opportunity to examine the exhibition itself as a communications medium and specifically to look at how technology is used in communicating a narrative. Interspersed among artifact cases, *The Once and*

Future Web presents 15 touch-screen interactives, 11 of which are content or narrative oriented. The narrative oriented interactives are designed to create a distinct visual identity for the telegraph and Internet stories while presenting a clear organizational structure to visitors. Separate color schemes, fonts and background image motifs are assigned to each of the parallel stories, while categories of information and access points to information, the framework or template, are constant. This unification of structure, like the overall design of the exhibition, helped to integrate the stories of the two parallel technologies into one coherent narrative.

In *The Once and Future Web* the interactives allow us to present visitors with a choice of cultural artifacts that can only be experienced through multimedia. This multimedia content provides a more holistic view of historical periods and supplements the narrative with words, pictures, voices, music, historic videos, animations, and a searchable glossary. Visitors are able to select and view content to experience a narrative tailored to their interests. Particularly, interactives supplement the narrative by:

- Providing in-depth information on a topic. For example, biographical material on Samuel F. B. Morse, inventor of the electric telegraph, including dramatic readings from his letters recounting his struggle for government funding, an interactive chronology of his life, and a gallery of his paintings. A glossary is also available from all stations, which provides instant information about people, places, things and ideas relevant to the narrative.
- Displaying multimedia artifacts. Visitors can choose to experience original audiovisual artifacts like radio broadcasts, song recordings, historic newsreels, and

clips from movies and documentaries. They can choose recordings made for the exhibition including songs about the telegraph performed from historic sheet music, dramatic readings from letters and an autobiography, video interviews and animations. And they can see contemporary digital art created in the form of movies and graphics designed for distribution by media such as video games and the Web.

- Illustrating complex technical concepts. A set of 5 high definition animations was commissioned for the exhibition to facilitate visitors' understanding key technological concepts like the Morse telegraph, networking, digitization, encryption and bandwidth.
- And enlivening mainly textual material. Textual materials contain exciting information for historical and cultural narratives but it can be difficult to bring these words to life in an exhibition environment. The interactives contain recordings of dramatic readings from letters and autobiographies so visitors can choose to listen to the author's own words without being required to read long passages.

The exhibition also includes four interactive demonstrations of specific concepts or digital technologies that are more engaging than the narrative interactives. Visitors can create a Morse-coded message or a digitally manipulated photograph and email it to friends. Using voice recognition software, visitors can participate in a virtual conversation with Donna Cox, an artist and internet communications expert. Another interactive allows visitors to manipulate an example of "virtual anatomy." While the content oriented interactives allow visitors to choose from many small pieces of the story to create their own narrative, these more engaging interactives provide visitors an

opportunity to participate in the actual subject of the narrative: to actually do what is being described by the content. Visitors can become a user of the technology the narrative describes by, for example, learning about digitization and then taking a digital picture of themselves, manipulating it and sending it to someone in an email. Another interactive allows visitors to interact with a telegraph operator in virtual telegraph office where they can write a message and hear it in Morse code and then email that coded message to someone who can later decode it by visiting a website. Both the telegraph and the Internet required the interaction of individuals with technology to achieve communication. In a way, the exhibition interactives do the same, allowing visitors to interact with technology and actively receive the narrative message being sent.

Yet, displaying and interpreting communications technology is a challenging undertaking because the material that illustrates the stories is ephemeral. Many of these materials are textual, words on paper, audio or video. The interactives display digital artifacts in their original medium, such as video game movies and art produced for the web. The interactives also present audio or video recordings converted from other media, such as historical newsreels or contemporary interviews. In *The Once and Future Web* the interactives show visitors sometimes overtly sometimes more subtly the various aspects of digital media delivery. In order to incorporate these multimedia artifacts into our interactive templates and to provide a seamless and orderly experience from which visitors can draw, we first had to reformat the original material from a number of different media. This is a complex task, but for us one of the greatest advantages of

digital interactives is the number of different source materials we were able to convert to digital formats and insert into a consistent, coherent, easily navigable template.

Challenges for Digital Narratives

In order to incorporate the extensive list of audiovisual materials described in the previous section, a good deal of manipulation and reformatting was required. In his 2001 paper "Re-purposing of Content and Digital Delivery Convergence: Implications for Interface Design" Dr. Milekic of the University of the Arts enumerates the various ways that materials previously available through other media are being increasingly re-purposed for use in digital media. He defines re-purposing "in most general terms…as manipulations of *space*, *time,* and *meaning* within the new medium. Most often re-purposing involves some kind of *compression*." He goes on to say that transferring information from one medium to another, such as from film to digital file, is one aspect of re-purposing which he calls inter-medium, while reformatting or modifying a digital file, changing its resolution or compression algorithm for example, is another aspect which he calls intra-medium re-purposing (Milekic 2001). It is important when embarking on the creation of exhibition interactives to plan ahead and consider the kind of re-purposing required both for the exhibition floor and for other supplemental projects associated with the exhibition content such as web sites, catalogues, DVDs etc.

Extensive re-purposing of multimedia materials can quickly become a complicated and confusing task. The seemingly inordinate amount of effort required to include

multimedia materials can sometimes end up causing a development team to give them false weight in a narrative. However, use of multimedia can be very rewarding in illustrating a narrative. In *The Once and Future Web* interactives allowed us to provide visitors with a rich array of audiovisual artifacts and information and a more complete picture of the cultures that surrounded the telegraph and Internet as they were invented and developed.

The production process required us to take materials from their original formats such as printed media, photographic film, radio broadcasts, vinyl LPs, audio cassette tapes, VHS tapes, computer hard drives, audio CDs, CD-ROMs and DVDs, BetacamSP tapes and others, and re-purpose them (digitize, compress, and insert them into a program) in order to bring them all together and make them accessible to visitors in a coherent and approachable way. Creating interactives also require s forethought to prepare the way for the re-purposing of content to extend the reach of the exhibition message. For example, in this exhibition we commissioned a set of high definition digital animations, presented throughout the exhibition under the heading “Show Me How it Works!” to explain complex technological concepts. Also, 13 original interviews with innovators such as Vint Cerf and Leonard Kleinrock and scholars of the history of the telegraph such as David Hochfelder and Richard John were digitally recorded to digital videocassettes. We included only small portions of each of these interviews in the exhibition but the full-length videos exist and can potentially be presented in another format to another audience and archived as additional resources for scholars. We hired professional actors to read from historic texts and musicians to perform several songs from historic sheet music and

recorded these on digital media. We created all these pieces with the knowledge that they would be re-purposed and presented in other formats and configurations, including our Web site and a DVD. Such supplemental projects can provide accompaniments to the exhibition and prolong its life past the physical installation and also expand on the narrative in ways not addressed by the physical installation. For example, the Web site for *The Once and Future Web* not only presents much of the physical exhibition's content re-purposed for the web but it also provides a "Learning Station" designed to help teachers prepare for visits or teach concepts related to the exhibition's narrative. This section provides exhibition content materials in new contexts such as pre-visit activities. Similar reconfiguration of materials is made relatively uncomplicated once a digital archive of exhibition materials is achieved.

The complexity and multi-stage process of the re-purposing procedures presents a new challenge in the archiving of an exhibition. Archives are maintained as a record of the exhibition and also as a resource for the creation of any supplemental projects associated with the content of an exhibition. Where once slides and transparencies of each object present in the physical exhibition or of the exhibition itself sufficed to create a record of the exhibition, now the situation becomes much more complex. Modern printing techniques for catalogues and other printed materials require high resolution digital files of images, new multimedia products such as DVDs can display high resolution media files and new advances in web technology allow the incorporation of ever more complex and detailed media than ever before. All these media have different requirements. Re-purposing often involves several stages such as dubbing, cropping, digitization,

compression, encoding and others. When we consider archiving, questions of how many stages of these processes should be retained and what formats should be make standard become important.

The use of interactives also brings new challenges when incorporating accessibility issues into the development process. *The Once and Future Web* was developed under the federal government's ADA regulations and accessibility requirements were considered in its design. On the exhibition floor, the interactives were made accessible to visitors using wheelchairs by placing the screens at an appropriate height and leaving space for the chair in front of the screen. The screens were also mounted on a swivel bracket so they can be tilted to multiple viewing angles. Touch-screens provide easy and immediate access and eliminated the need for a keyboard, mouse or other controller. All audio and video is closed captioned or transcribed for people with impaired hearing and exhibition tours, led by an on-staff educator, are available daily or by appointment with sign interpretation on request. Of concern in the design of future exhibitions is a recent government mandate of standards, effective as of June 2001, developed under section 508 of the Rehabilitation Act as amended by Congress in 1998. It requires that all information technology created for or used by the federal government meet new, very specific accessibility specifications.

Conclusion

Digital communications technology made it possible to answer many challenges posed by an exhibition about communications technology. *The Once and Future Web* allows

visitors to navigate and choose from a vast array multimedia artifacts woven into a narrative. Through making selections and interacting with the technology visitors are in fact participating in the very story being delivered to them. In order to make this selection possible audio, video and digital materials from many media were re-purposed and integrated into a coherent experience. This re-purposing process also creates opportunities for expanding the uses of the material in other formats, thereby extending the reach of the exhibition beyond its physical installation. It is not without its challenges, however, as accessibility and archiving issues become more difficult as the complexity of the multimedia materials increases. Still, the challenge is well worth meeting when the audience, both at the exhibition and in related supplemental projects, can be provided with a holistic representation of the narrative brought to life by artifacts that can only be experienced through multimedia.

References

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Biographies

Patricia Tuohy

Since 1996, Patricia Tuohy has managed the conceptual, creative, and production processes for a new exhibition program that presents interactive projects about science, health, their history and their impact on American culture and society for the world's largest medical library. Prior to joining the staff at the National Library of Medicine as exhibition program manager, Ms Tuohy managed the development of a number of independent projects including a 5000-square-foot traveling exhibition, an interactive high-school curriculum program presented on CD-ROM, a 30-minute planetarium presentation, and a two-day academic symposium about the history of medicine. While at Staples & Charles, Ltd., an award-winning exhibition design firm, Ms Tuohy served as project manager for a number of temporary and permanent exhibitions. Following her graduation from Pratt Institute with a B.F.A. in painting, Ms Tuohy was an exhibition preparator for the American Museum of Natural History in New York City.

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